INDIGENOUS KNOWLEDGE OF MADE IN JAVA WITH SUSTAINABILITY ZERO WASRE CONCEPT FROM TULISAN.COM

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Abstract

This study examines the development and implementation of zero-waste-based eco-friendly products as an innovative solution to address environmental challenges resulting from increased waste and resources consumption. The background of this study is based on the urgency of mitigating the impacts of climate change and environmental degradation, which highlights the need for a sustainable approach in the product life cycle. The main objectives of the study are to analyze the technical and economic feasibility of zero-waste-based ecofriendly products, as well as to evaluate their potential acceptance in the market. The research method used is an extensive literature study. This approach involves collecting, analyzing and synthesizing data from various academic sources such as scientific journals, books, research reports, and other relevant publications that discuss the concept of eco-friendly products, zero waste, product life cycle analysis, and consumer behaviour towards sustainable products. In this study, the case will be linked to the theory of sustainable development by Jianming Yang. The main findings of this study indicate that eco-friendly products based on zero waste have significant potential in reducing carbon footprints, upcycling materials, avoid chemical process that harms enviorment, avoid method that can harm animal or nature and solid waste volume. The conclusion of this study confirms that the development of eco-friendly products based on zero waste is not technically feasible and ecologically profitable, but also has a promising market share along with the increasing environmental awareness of consumers.

Keywords: Zero Waste, Social Development, Sustainability, Communication

INTRODUCTION

BACKGROUND OF THE RESEARCH

The escalating global environmental crisis, characterized by pervasive pollution, biodiversity loss, and the accelerating impacts of climate change, necessitates urgent and multifaceted solutions. Traditional reliance solely on Western scientific approaches has

proven insufficient in mitigating these impacts and achieveing sustainable resource management. A critical paradigm shift is therefore required, one that recognizes the profund value of Indegenous Knowledge system made for playing role in nowdays modern solutions. (Muqsith & Muzykant, 2020)

These systems, developed and refined over millennia, offer alternate worldviews and empirically tested practices for conservation and stewardship, fostering a deep understanding of human enviorment harmony. This global imperative highlights the limitations of a purely technocentric or western scientific approach, underscoring the urgent need to intergrate alternative knowledge system like indegeneous knowledge in all over the country. (Sari, 2019)

South asia region is one of the countries that have cultures, history and their own uniqueness in each story behind it. In this study, we take place Indonesia particulary in java. As we know, Indonesia is rich in indigeneous knowledge that shaped the local communities relateshionship with nature and resource management for centuries. In the context of global enviormental crises and urgent call of sustainable development, there is a growing recognition of the value of indigenous wisdom addressing modern ecological challenges.

The zero waste movement, which advocates for minimizing waste and promoting circular resources use, resonates deeply with many traditional Javanese practices that empahasize harmony with nature, resoucefullness, and respect for the enviorment. This paper examines the profund of interconnection between Javanese indigenous knowledge and contemporary concept of sustainability and zero waste combine create a new culture.

Tulisan.com an Indonesian brand specializing in eco-handmade bags and accessories, serves as a compelling case study for this integration. The brand explicitly combanies traditional Indonesia craftsmanship with sustainable methods and ethical practices, evidences by its trend mark of the product "Made in Java" collections and Bluesign® certification.

Their commitment extends to minimizing waste in production and fostering social impact, reflecting a holistic approach to responsible business. Tulisan.com's conscious branding as "Made in Java" and its Bluesign® certification act as communicative signals of its commitment to both cultural heritage and verifiable sustainability as a product.

CORE PROBLEM AND ISSUE URGENCY

Despite the proven effectiveness of indigenous knowledge in fostering sustainable living, these pratices are increasingly marginalized by rapid modernization, consumer culture and industrialization. The erosion of traditional wisdom threathens not only environmental the gap between traditional ecological knowledge and contemporary sustainability efforts,

particulary in the creative and fashion industries, where waste and explotation are significant issues. (Masami, 2019)

There is pressing need to document, analyze and intergrate indigenious Javanese concept into the modern zero waste frameworks to inspire more industries and retails company using concept and ideas of sustainable production and consumptions patterns to keep away from harming animals and nature for the future of eco-friendly fashion trends. Allow many public to enjoy and express their feelings with style and personality on what they wear on daily without feeling guilty to fullfill their daily personal needs on fashion sense.

The zero waste movement requirments are the social situation and public. How can society adapt to the surrounding environment and be aware of the impact of sustainability if we do not care about the earth in the future if we still act by producing a lot of waste, using disposable goods, and not managing waste properly. For every cause, humans need to realise how bad can be when our grandchildren can't enjoy the beauty of nature earth while we try to satisfy our ego by consuming unfriendly earth product that leads to a serious climate changes, health problems, and Environmental Pollution and Increasing Waste Threatens the Environment. (Zhan, 2022)

This rich heritage of sustainable practices and the emergence of conscious brands, contemporary java faces severe environmental degredation driven by societal negligence. This includes rampant waste generations (especially plastic), industrial pollution, and inefficient resource management. These issues result in significant negative environmental impacts, such as contaminated water bodies, air pollution, habitat descruction, and greenhouse gas emissions, directly impacting human health and ecological intergrity in long term generational hereditary. (Kumar, 2021)

This study is significant in demonstrating how the integration of insidigenous knowledge and zero waste principles, exemplified by entities like Tulisan.com, can offer viable pathways to mitigate environmental degredation in Java. It emphasizes the crucial role of communication science translating traditional wisdom into contemporary action, fostering environmental awareness, and promoting sustainable behavioural change.

RESEARCH QUESTIONS AND OBJECTIVES

This research is guided by the following questions:

- How do Javanese indigenous knowledge systems and traditional practices

inherently embody principles of sustainability and zero waste?

- What are the specic negative environmental impacts observed in Java due to societal negligence, and how do they contrast with traditional resource management?
- How does Tulisan.com integrate Javanese indigenous knowledge, sustainability, and zero-waste concepts into its brand philosophy, production, and social impact initiatives?
- What is the role of communication in fostering environmental awareness, promoting sustainable practices, and bridging the gap between traditional wisdom and modern environmental challenges in Java?

The main objective is to explore and elucidate the synergy between Javanese indigenous knowledge and the modern zero waste movement, using Tulisan.com as a case study.

SIGNFICANT BENEFITS or CONTRIBUTION of THE RESEARCH

This study contributes to the field of communication and sustainability by:

- Providing an in-depth understanding of how indigenous knowledge can inform and enhance contemporary sustainability initiatives, particularly in creative industries.
- Offering practical insights for designers, producers, and policymakers on integrating traditional wisdom into zero waste frameworks
- Supporting cultural preservation by documenting and disseminating Javanese ecological values and practices
- Contributing to the achievement of Sustainable Development Goals (SDGs), especially those related to responsible consumption, production, and the preservation of cultural heritage.

RELEVANT PREVIOUS RESEARCH

Several studies have highlighted the role of indigenous knowledge in supporting sustainable development in Java. For example, research by (Wakhidah et al., 2024) on Gugon Tuhon form of Javanese community advice demonstrates its alignment with SDGs, particularly in areas of clean water, health, and hunger eradication. Another study on the Osing community in Banyuwangi by (Arifah et al., 2024) underscores the importance of indigenous knowledge for water conservation and sustainable agriculture. Additionally, the

integration of indigenous knowledge into educational content has been shown to enhance scientific understanding and promote environmental stewardship.

CONCEPTS AND THEORIES

The Concept and theories that being used in this study is "From Zero Waste to Material Closed Loop: The Way Towards Circular Economy" by Jianming Yang that explores the critical transition point in the global economy toward circularity, focusing on the opurtunities and challenges of achieving zero waste across different industries. The theories defines the circular economy as a system where resources minimizing causes such as environmental impact through low extraction, high utilization and low emissions.

(Yang, 2022) discusses how the path to a circular economy varies by country, region and industry, but always aims to align economic development with environmental harmony. The theories start with the traditional endpoint of economic activity waste and traces through the journey of compliance management and material closed-loop systems, emphasizing waste diversion and utilization. The analysis is grounded in the entropy principle from thermodynamics, examining mass balance and energy consumption to assess the theoretical limits and societal impacts of the main idea in zero waste strategies.

Zero Waste in The Fashion Industry

The fashion industries is one of the world largest economic sectors and a significant contributor to environmental degredation, generating approximately 92 tons of textile waste annually. Traditional linear production models is "take-make-dispose" in the result in massive fabric waste, inefficient use of resources and increased levels of pollutions.

Zero waste in fashion refers to design and production that aims to eliminate or drastically reduce textile waste, especially during the pattern cutting and garment manufacturing stages. Unlike conventional pattern-making, which can leave up to 15-20% of fabric as waste. Zero waste fashion employs innovative pattern techinques to ensure that nearly all fabric is utilized with less than 15% waste as a benchmark.

In this theory, (Yang, 2022) explain the principels of zero waste in circular fashion:

Category	Key Aspect	Description	Relevance to Circularity
Challenges	Economic Viability	Lower profit margins	Hinders widespread
		from resale/rental	adoption and investment
		compared to new sales;	in CBMs.
		miscalculations in value	
		recovery projections.	

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	Overproduction	Industry's routine disposal of unsold stock often ignored in CE	Undermines efforts to address root causes of waste.
		discourse.	waste.
	Policy & Standards	Lack of consistent CE	Impedes accountability
	Toney & Standards	definition; risk of	and genuine systemic
		"greenwashing";	change.
		insufficient ,	change.
	Material Flows	transparency.	Prevents efficient
	Waterial Flows	Ineffective recycling	
		systems; need for	closed-loop material
		improved material	cycles.
		identification, sorting,	
	W 1 : 10	pre-processing.	T
	Technical Gaps	Need for technologies	Limits quality and
		that maintain value of	economic viability of
		recycled materials and	recycled inputs.
		reduce processing costs.	
	Social Impact	Potential for precarious	Raises ethical concerns
		labor conditions in	within the transition.
		lower-margin circular	
		models.	
	Industry Influence	Dominant firms shaping	Risks maintaining status
		discourse, potentially	quo rather than
		sidelining radical	fundamental change.
		alternatives.	
Opportunities	Business Models	Emergence of rental,	Creates new revenue
		resale, and product-as-a-	streams and extends
		service models.	product lifespan.
	Material Innovation	Development of	Enables true material
		biodegradable, plant-	circularity and reduces
		based, and advanced	virgin resource
		recycled fibers (e.g.,	dependency.
		ECONYL®,	
		loopamid®).	
	Consumer Demand	Growing consumer	Drives market adoption
		awareness and	and brand commitment.
		preference for	
		sustainable options.	
	Brand Loyalty	Circular programs	Builds stronger brand
		(repair, take-back)	relationships and market
		enhance customer	differentiation.
		engagement and loyalty.	
		ongagement and royalty.	

Table 1. The key challenges and oppurtunities in circular Fashion

Industry Defining Indegenous knowledge with Traditional Javanese Practices

Indegenous knowledge, often refered as to as Traditional Ecological Knowledge (TEK), encompasses a cumulative body of local wisdom, tradition and beliefs that have evolved through adaptive processes and been transmited across generations by Indigenous peoples, This knowledge is deeply rooted in centuries of observation, experimentation, and

spiritual practices, fostering profound understanding of the natural world and the intricate relationships between living oraganisims and their environments. Crucially, this knowledge alternate worldwide views that perceive nature not as a separate entitry to be exploited. But, as an interconnected system where humans are parts of integral.

This perspective emphasizes holistic management and long term thinking, often viewing land, water, and trees as "kins" rather than mere commodities. This embedded relational nature distinguishes as a distinct framework and stewardship, more than merely a set of practices selectively intergrated into the Western science.

The disctinction between Indegenous Knowledge as "Distinct Framework" versus a mere "selective intergration" highlights a critical ethical and epistemological challenge in environmental discourse. The ultimate goal is to foster a circular economy, mimicking natural circulation processes where everything becomes nutrient and no waste is produced, thereby moving away from the traditional linear "discard after use" economic model.

Javanese culture possesses a rich history of practices that inherently align with principles of sustainability and resourcefulness. Traditional Javanese architechtural practices, for instances, demonstrate sophisticated passive design strategies for energy efficiency. These including natural ventilation through large courtyard, strategically positioned windows, and specific building orientations that align with prevailing winds blows from nature.

Despite its variety of natural resources and traditional wisdom, java faces severe enviormental degredation, largely stemming from rapid urbanization, industrialization, and inadequate waste management. The persistence of these severe enviormental impacts, exisiting regulations and community efforts, underscores that societal negligence is not merely a lack of awernesss but systemic issue rooted in economic sturctures and goverance failures, requiring multi level of interventions.

For examples, Industrial pollution cases like the RUM factory at central java and numerous facilites along the citarum river illustrate the dumping of toxic effluents, including carbon disulphide gas, sulfuric acid, zinc, and heavy metals into vital waterways. On other cases java faces resource depletion and inefficiency beyond direct waste and pollution of border javaness resources management challenges including substantial food loss and waste estimated 115-184 kg per capita annually in Indonesia and contributing 7.3% of the country's greenhouse effects caused by gas emissions.

Communication plays a pivotal role bringing the gap between traditional ecological knowledge, scientific understanding, public awareness, and collective action for enviormental

stewardship. Effective communication strategies are crucial for integrating indigenous knowledge into climate action and sustainable development. This involves fostering genuine dialogue and collaboration between Indegenous communities, scientists, policymakers, and other stakeholders, moving beyond superficial "co-production" to true knowledge exchange and mutual respect. This models highlights the importance of empowering indegenious voices to narrate their own experiences and sollutions, ensuring their based knowledge.

METHODOLOGY

Research Approach and Method

In this study, we use a qualitative descriptive approach within the framework of a literature review (library research). The approach aims to explore and interpret how Indigenous Knowledge and sustainability, especially when the zero waste concept are being communicated and implemented by Tulisan.com, which is a brand rooted in Java heritage and committed to eco-friendly practices. The research is guided by the qualitative design pirnciples outlined by Creswell & Creswell (2018), focusing on understanding meaning, context, and process rather than quantification.

The research method is a descriptive-qualitative literature study. The study systematically collects, reviews, and synthesizes secondary data from reputable sources to analyse the intersection of indigenous knowledge, sustainability, dan zero waste concept as manifested in Tulisan.com's communication and practices.

Data Collection Methods

Data sources are exclusively secondary and including the official website and social media of Tulisan.com platfroms that provide documentation of the brand's sustainability narratives, product descriptions and public communication regarding eco-friendly practices. Relevant publications like Academic articles, Journals and reports discussing about Indegenous Knowledge systems in waste management and sustainability, the zero waste concept and its application in Indonesia, and case studies or reviews of sustainable fashion and eco-friendly business communication. Data are collected by systematically searching, selecting and reviewing materials that address the research focus. The inclusion criteria are relevance, credibility and recency. (Cheong et al., 2023)

Data Analysis Technique

This study employs a descriptive qualitative analysis technique, the steps include:

- a. Data Reduction: Selecting and categorizing relevant information from the collected literature, focusing on themes such as Indigenous Knowledge, Sustainabilty, Zero Waste, and Communication strategies.
- b. Data Display: Organizing findings in thematic categories, such as the integration of indigenous (Javanese) Values in Tulisan.com's sustainability practices, Communication plan for promoting zero waste eco-friendlty value, and the role of digital platforms in environmental advocacy.
- c. Interpretation: Interpreting the data to identify patterns, relationships, and insights regarding how Tulisan.com embodies and communicates indigenous knowledge and zero waste principles.
- d. Conclusion Drawing: Synthesizing findings to answer the research questions and provide recommendations for future studies or practical applications.

This method allows for a holistic and contextual understanding of the subject, aligning with the interpretive paradigm in qualitative research and ensuring depth in exploring both the content and the process of communications. (Creswell & Creswell, 2018)

RESULTS AND DISCUSSION

Brand Philosophy and Commitment to Sustainable Ethical Java Prodcution

Tulisan.com stands as a compelling example of a brand that consciously intergrates Javanese indigenous knowledge, sustainability, and zero waste principles into its core operations and brand identity. Tulisan as brand position itself as an "honest" and clean company that is dedicated to empowering others, celebrating individuality, and caring the world condition and longevity for nature human being.

Founded in 2010 by Melissa Sunjaya, the brand core philosophy is deeply rooted in eco-friendly materials, the practical of sustainable, and fair work ethics. This expilicit articulation of its own combined with the third-party certification that creates a powerfull and trustworthy brand narrative. Their implementation of the Bluesign® system certification concretely demonstrates how their commitment to traditional ethical production.

This Rigorous Swiss standard monitors for responsible resource usage, clean work processes, wastewater management, healthy air ventilation and worker safety, while also ensuring a finale safe products for their customers. This certification provides a verifiable external validation of their sustainability claims moving beyond mere rhetoric to quantifiable and auditable practices to improve the the identity of eco-friendly company.

The product, particulary "Made in Java" Collections are hand-crafted in the traditional way in Indonesia. Showcasing the nation finest artisanal craftmanship. The brand creations of "heirlooms collections" directly embodies the "Reduce" and "Reuse" principles of zero waste by promoting product longevity and discouraging disposability, a practices deeply rooted in traditional making where items were made to last out of necessity materials.



Figure 1. Tulisan.com Products "Made in Java" Source: Tulisan.com Official Website Pages

Role of Zero Waste Principles and Strategic Communication

The application of modern zero-waste principles like Refuse, Reduce, Reuse, Recycle, Rethink/Redesign. In conjuction with indigenous knowledge offers a powerfull framework for adderesing Java's environmental problems and moving towards a circular economy. Strategic communication is paramount in facilitating this intergaration and driving change. It is crucial for translating traditional wisdom into contemporary action, fostering environmental awareness, and promoting sustainable behaviour shifts. This involves:

- a. Facilitating Knowledge Intergration: Communication must bridge the gap between indigenous communities, scientist, and policymakers. Fostering genuine dialogue and co-production of knowledge rather than superficial intergration.
- b. Empowering Community Voices: Leveraging modern communication tools, as demonstrated by the Wayuri network that can empower indigenous communities to share their ancestral knowledge and adaptation strategies, ensuring their narratives reach broader audiences and influences decision making spaces.

- c. Fostering Awareness and Behavior Change: Campaign based on communication need to be culturally sensitive and utlize diverse channels to educate the broader public waste on sorting, reducing consumption, and the importance of supporting sustainable local products highlighting the economic oppurtunities.
- d. Advocating for Policy and Enforcement: Communication plays a critical role in holding institutions accountable for environmental protection.



Figure 2. Zero Waste Management on Tulisan.com Products Source: Tulisan.com Official Website Pages

By combining the profund ethical frameworks and practical wisdom of Javanese indigenous knowledge with systemic approach of zero waste principles, supported by strategic and culturally sensitive communication, Java can forge a path towards a more sustainable and resilient future. This synergistic approach recognize that effective enviormental sollutions are not solely technical but are deeply rooted in cultural values, social responsibility, and effective knowledge exchange.

Communicating Sustainability: Brand Narratives and Consumer Engagement

Tulisan communicates its commitment to sustainability through a multi-layered brand identity. This includes explicit branding as "Eco Handmade Bags" clear statements on its website regarding sustainable and ethical practices, and the prominent display of its the Bluesign® certification. The "Made in Java" collection and "Legacy" series serve as powerfull narrative devices that connect consumers to the cultural heritage and traditional craftmenship behind the products.

Tulisan's multi-layered communication strategy, combining explicit certifications, cultural narratives, and philosophical statements, effectively educates consumers and builds brand identity that transcends mere product sales to promote a sustainable and ethically conscious lifestyle. This serves as a practical example of effective environmental communication in action as brand of eco-friendly products.

Category	Tulisan.com Practices	Explanation/Connection
Indigenous Knowledge Alignment	All Hand-crafted in Indonesia by traditional way, "Made in Java" collections ⁶	Upholds traditional Indonesian artisanal craftsmanship, fostering local skills and heritage.
	"Plant walks" and " the care for mother" philosophy ³⁸	Reflects Javanese relational ethics and holistic environmental stewardship (e.g., "Memayu Hayuning Bawana" ³).
	The "Legacy" series, "heirloom collections"	Promotes longevity and value in products, mirroring traditional practices of creating durable goods.
Sustainability Principle	Bluesign® system certification ⁶	Verifiable commitment to responsible resource use, clean work processes, and worker safety.
	Use of water-based pigments, eco-friendly inks 11	Reduces environmental impact of textile dyeing, addressing pollution in Java. ¹³
	Ethical practices, fair work ethics ⁶	Ensures social sustainability, fair treatment of workers, and community well-being.
Zero Waste Principle	Minimizing waste on printing "from the start"	Proactive, design-led approach to waste reduction, aligning with the concepts of "Rethink/Redesign".4
	"Zero waste and eco- friendly material from the start"	Explicit commitment to waste avoidance throughout the product lifecycle.
	Creation of "heirloom collections"	Encourages product longevity, directly reducing consumption and waste by promoting reuse and durability.
Social Impact	"Pepe" doll project with street children (KDM)	Provides entrepreneurial experience and welfare benefits, addressing social inequality and poverty.
	Upgrading dignity of serigraph industry	Fosters ethical jobs and artistic merit, contributing to decent work and economic growth.
	TULISAN AIR (Artist In Residence) program	Supports aspiring artists, including those with disabilities, promoting inclusivity and reducing inequality.
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Table 2. Tulisan.com's Practices Aligned with Indigenous Knowledge, Sustainability Zero Waste

The environmental challenges confronting the culture of java are extensive and severe, representing a clear consequence of societal negligence and a departure from traditional ecological wisdom. The scale of waste generation, particularly plastic is alarming with urban java alone contributing a substantial portion unmanaged waste that contaminates land and waterways highlights profound failure in governance programs and corporate responsibility. (Kusumajanti et al., 2020)

CONCLUSION AND RECOMMENDATIONS

This paper has explored the critical intersection of Javanese indigenous knowledge, the modern zero-waste concept, and their potential to mitigate significant negative enviormental impacts in java, using Tulisan.com as a compelling case study. The analysis reveals that Javanese indigenous knowledge systems inherently embody principles of sustainability and resourcefulness, manifested across traditional architecture, agiculture and crafts. Concepts like "Memayu Hayuning Bawana" and "Sedulur Sikep" provide a profund ethical and relational framework for living in harmony nature, emphasizing non-exploitation stewardships by their very nature, promoted resource efficiency, durability, and minimal waste, often relying on local natural materials and labor intensive processes.

The contemporary java faces severe environmental degradation, particularly from rampant plastic waste and industrial pollution, which stand in strak contrast to this rich indigenous heritage. This disjuncture underscores a societal negligence rooted in the adoption of linear economic models and a marginalization of trafitional ecological wisdom. The persistences of these problems is exacerbated by inadequate infrastructure, low public awareness, and insufficient law enforcement, highlighting systemic governance and communication challenges.

Tulisan.com emerges as a significant example of how modern brand can bridge this gap. Through its explicit commitment to "Made in Java" craftsmanship, Bluesign® certification, and the use of eco-friendly materials and design-led waste minimizataion, the brand actively intergrates sustainability and zero-waste principles into its production. Furthermore, Tulisan.com's extensive social impacts intiatives demonstrate a holistic approach to sustainability that encompasses social equity and community empowerment, mirroring the interconnectedness inherent in indigenous worldviews.

The findings underscores that effectives environmental sollutions in Java require a synergistic approach. This involves revitalizing and intergrating Javanese indigenous

knowledge, applying comprehensive zero waste principles across production and consumption, and leveraging strategic communication to foster awareness, empower communities and advocate for policy changes. The success of community-led initiatives and the power of indigeneous communication networks demonstrate that cultural sensitive, participatory approaches are crucial for translating knowledge into tangible environmental action especially in Java, Indonesia where wisdom illuminates a sustainable path.

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